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ABSTRACT

An international consultation meeting was organized to identify major issues and priorities in the formulation of technical and vocational education (TVE) policies and strategies and to propose guidelines and format of future regional case studies. Participants submitted country reports focusing on issues considered essential to the development of TVE in their countries: Australia, Egypt, Germany, Italy, the Republic of Korea, Kenya, and Nigeria. These reports identified such issues as the following: the role of general education in providing the foundation for a multi-skilled, flexible, and adaptable work force; adapting education to the production needs of the economy; a too-academically oriented educational system; inadequate technical curricula; shortage of qualified technical teachers and workshops; training for entrepreneurship; and lack of funds for purchasing effective teaching/learning materials. These issues pertaining to the role of TVE in the educational system and the process of socioeconomic development were discussed: linkage between TVE and the world of work; TVE as integral element of general education and a lifelong process; making TVE more attractive; inculcation of entrepreneurial skills; efforts to improve the participation of women and other special groups in TVE; teacher training; and the economics of TVE. A format for case studies was developed, and issues that should be included were recommended. (A list of participants is appended.) (YLB)

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ED 378 371

UNEVOC

International Project on Technical and Vocational Education
(UNEVOC)

International Consultation Meeting on the Role of Technical and Vocational Education in Educational Systems

FINAL REPORT

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Turin, Italy

14-18 June 1993

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UNITED NATIONS EDUCATIONAL,

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INTERNATIONAL PROJECT ON TECHNICAL AND VOCATIONAL EDUCATION

(UNEVOC)

INTERNATIONAL CONSULTATION MEETING ON THE ROLE OF TECHNICAL AND VOCATIONAL EDUCATION IN EDUCATIONAL SYSTEMS

Turin, Italy

14-18 June 1993

FINAL REPORT

TABLE OF CONTENTS

INTRODUCTION

REVIEW OF THE CURRENT SITUATION

- SUMMARY OF COUNTRY REPORTS

ROLE OF TECHNICAL AND VOCATIONAL EDUCATION

GUIDELINES FOR FUTURE CASE STUDIES

ANNEX I: PROGRAMME OF THE WORKSHOP

ANNEX II: LIST OF PARTCIPANTS

INTRODUCTION

Background

Within the framework of the 1993 Workplan for the International Project on Technical and Vocational Education (UNEVOC), an international consultation meeting on "The Role of Technical and Vocational Education in Educational Systems" was organized by UNESCO in co-operation with the ILO International Training Centre and was held at the ILO International Training Centre in Turin, Italy from 14 to 18 June, 1993.

The objectives of the meeting were:

(i) to identify major issues and priorities in the formulation of technical and vocational education (TVE) policies and strategies;

(ii) to propose guidelines and format of the future regional case studies.

Participation

The meeting was attended by participants from nine Member States: Australia, Egypt, France, Germany, Hungary, Italy, Kenya, Republic of Korea and Nigeria. A resource person from the European Centre for the Development of Vocational Training (CEDEFOP) also participated in the meeting and provided information on the objectives of the meeting, with particular reference to activities in the European region.

Work of the meeting

The meeting was opened by Mr. Giulio Piva, Deputy Director, Training Department, ILO International Training Centre. Mr. Rolando Tiburtini, Chief, Section for Technical and Vocational Education, UNESCO, briefly introduced the UNEVOC Project and explained the background and objectives of the meeting. The German participant, Mr. Peter Thiele, was invited to present brief background information on the UNEVOC Project, with particular reference to the UNEVOC Implementation Unit in Berlin.

Each participant submitted a country report to the meeting, focusing mainly on major issues considered essential to the development of technical and vocational education in their countries.

SUMMARY OF COUNTRY REPORTS

This review summarises the relevant information provided in the country reports submitted by the participants. Since the contents of some of the reports were not in line with the major theme of the meeting, this part of the report could not cover the experience of all participating Member States.

AUSTRALIA

As Australia moved through economic restructuring in the 1980s, it was recognised that technical and vocational education plays an important role in increasing the flexibility and skills of the workforce, thereby providing industry with greater opportunities to develop their competitivity. To this end, Australia is developing a renewed emphasis on the role of general education in providing the foundation for a

multi-skilled, flexible and adaptable workforce and a greater emphasis on broad employment-related competencies in the vocational training sector. In addition, there is an ongoing emphasis on the development of specific vocational competencies at both entry level and more advanced levels.

The role of technical and vocational education and training is encapsulated in a set of national goals and objectives which were adopted by the Australian Ministers responsible for education and training in 1992. The broad goals are to:

- develop a national technical and vocational education system;
- improve the quality of the outcomes of technical and vocational education;
- improve vocational education and training opportunities and outcomes for individuals;
- improve the ability of the technical and vocational education system to respond to the needs of industry;
- improve access to and outcomes from technical and vocational education for disadvantaged groups;
- increase public recognition of the value of technical and vocational education as an investment for both industry and individuals.

Institutional post-school technical and vocational education is provided primarily through publicly-funded Technical and Further Education (TAFE) institutions. They are the major providers of the off-the-job component of entry-level training under Australia's system of apprenticeships and fellowships. There are over 150,000 apprentices and trainees in training in the TAFE system. There is also a growing number of private sector training providers offering accredited training to the public. In addition, less formal adult and community education providers have a role in the technical and vocational education system and much training occurs on-the-job in informal and structured settings.

The regulation and funding of the technical and vocational education sector is primarily a State responsibility. However, in August 1992 all State governments agreed to a national framework for the recognition of training. The framework provides for the national recognition of accredited courses, training programs, registered training providers (public and private sector) and credentials.

To a varying extent around the country, TAFE institutions also provide **custom made** training services to private firms on a commercial basis. A number of institutions have developed joint ventures with private firms. A range of private training providers operate in Australia, including business colleges, industry-based Skill Centres, computer training firms, etc. Increasingly, these providers are offering formally accredited training. Besides the system of TAFE institutions, Australia also has a large variety of less formal adult and community education (ACE) providers. These include publicly funded, community-based and private sector providers.

The Australian Committee for Training Curriculum is responsible for the development of national competency-based core curricula covering both off-and on-the job training and for the production of training materials. Increasingly, a modular approach to curriculum development and delivery is being adopted, adding further to the flexibility of Australia's technical and vocational education system.

Australia is currently piloting a new entry-level training system known as the Australian Vocational Certificate (AVC) Training System. This system is designed to ensure that the entrants to the workforce are equipped with both the generic "key competencies" and specific industry/occupational competencies. It will have several levels, each articulating to the next, and will provide nationally recognised credentials at each level. The system will include a broad range of pathways combining education and training and work experience. This will require flexible, co-operative delivery arrangements involving schools, TAFE institutions, private training providers, employers and community organizations.

EGYPT

In Egypt, about 90% of the pupils who complete the eight years of basic education enter secondary education. At this stage, they are divided into two streams: general secondary education and technical secondary education. It is the intention of the Ministry of Education to expand enrolments in technical education. The Ministry set a target of 70% for the proportion of enrolments in technical schools in relation to total enrolments in secondary education.

There are three types of technical schools in Egypt:

- industrial schools;
- agricultural schools;
- commercial schools.

Present government policy is to increase enrolments in industrial schools, while decreasing enrolments in commercial schools, and stabilizing those in agricultural schools. The new targets are to enrol 47% of the pupils in technical education in industrial schools, 13% in agricultural schools and the remaining 40% in commercial schools.

There are two levels of technical schools:

- three-year technical secondary schools, which offer three-year courses after basic education. Their curriculum includes both general and technical subjects. The emphasis is on the technical subjects and especially on practical training.

- five-Year technical schools, which offer five-year courses after basic education. Some of these schools train practical technical teachers.

The Ministry of Education has developed close links with some industries, which has led to the establishment of "Specialized Industrial Schools" located within public companies.

In 1987 the Ministry of Education initiated an objective assessment of the education system's weaknesses and outlined the main orientation of a comprehensive reform programme aimed at adapting education to the production needs of the economy. Among the priorities adopted in the new education plan, the development of technical education ranks highest as an effective instrument for improving productivity and raising employment opportunities of young graduates. The plan of improving and developing technical education includes modernizing the training equipment, developing new curricula, raising the level of teacher qualifications, establishing new specializations and developing strong links with the productive sectors.

In 1992 a new initiative was launched to improve technical education and

vocational training, based on the Dual System model with German aid. Steps had been taken to encourage all economy sectors (industrial, agricultural, commercial, banking, services, tourism) to participate in the dual system and train the students both in the field and on-the-job.

GERMANY

Technical and Vocational Education in Germany is part of the general education system and is provided in various forms:

- the "**Dual System**", covering on-the-job training and compulsory (part time) vocational school education for a period of two to three-and-a-half years, providing a qualification as a skilled worker;
- full time technical vocational schools, which provide courses of one to three years, offering a trade qualification;
- continuing vocational training schools, senior technical schools and technical schools, which provide continuing courses on the basis of formal vocational training courses.

The most important path of vocational training in Germany is the Dual System, which provides training for approximately 70% of the trainees.

As a rule, young people in Germany, who are in favour of vocational training instead of higher education, undergo education in a secondary school (Main School, Intermediate school or Grammar school), covering classes 9 to 10 and providing an intermediate certificate before they continue their vocational training, mostly in the Dual System.

The Dual System includes formal training, recognized by the State, free of charge for the apprentices, in two corresponding training locations: the work place (in-service) and the compulsory vocational school.

The core of this nation-wide standardized full-time training, which is provided in about 380 trades, consists of on-the-job training on three to four days a week, while training at the vocational school is provided on one or two days a week.

The majority of the trainees in the Dual System undergoes training in the sector of trade and industry, followed by the sectors of skilled trades, liberal professions, civil service, agriculture, home management and shipping.

Because of the federal structure of the German system of government, the authorities responsible for vocational training at the state level are under the auspices of the Federal Ministry for Education and Science, responsible for dealing with all principal questions concerning in-service vocational training and co-ordination at the federal level.

At the regional level the organizations which are responsible for vocational training are, in particular, autonomous bodies such as chambers of crafts, commerce and industry - whose membership includes all relevant firms in the region. These chambers set up, in their particular region, vocational training committees which are competent to perform advisory functions, to monitor enterprises and the training provided by them, to recognize and register training enterprises and to conduct

examinations as part of vocational training. The members of these committees are specialists from firms and vocational schools who are nominated at the recommendation of employer's organizations, trade unions and the education authorities.

The enterprise is where vocational training predominantly takes place, are responsible essentially for practical training, in all occupational fields. However, only those enterprises, which fulfil the conditions concerning the content of the training and which employ qualified trainers, are authorized to act as training enterprises . The majority of the firms provide vocational training voluntarily, free of charge.

In the enterprises which provide training, elected representatives of the workers exercise their influence on the planning and conduct of the vocational training and the employment of trainers in their plants.

The uniformity of vocational training in Germany, which is an essential pre-requisite for the quality and the horizontal and vertical mobility of the workers, is ensured by close co-ordination between federal and regional authorities, in consultation with the social partners and those participating in training.

ITALY

In Italy, upon completion of compulsory lower secondary education, students have the options to continue their further study for three, four or five years, at the end of which they may to undertake higher education or enter the job market. Technical and vocational education is offered by technical schools and vocational schools respectively.

Technical education is provided to students aged between 14 and 19 years. Technical schools aim at preparing students to practise professions, technical or administrative services, in the agricultural, industrial and commercial sectors. For each of these employment areas training is provided in various sectors and specializations, the most common of which are:

- Industry
- Agriculture
- Commerce
- Surveying
- Tourism
- Navigation
- Educational courses for women and girls which in the past was intended for traditional occupations reserved to women (such as home economics, nursing,nutrition etc.) and is now being rapidly included in the training of social service technicians for both sexes.

During the first two years all technical schools have a common programme comprising foreign languages, basic and social science subjects, as well as technical drawing. In the following three-year period, while the programme continues with subjects such as Italian literature, history, civics and physical education, other subjects are all related to a specific sector and specialization with a significant part of the curriculum devoted to practical exercises.

Since the early 1980s,in view of the rapid changes of the industrial society, the technical education system has been subject to numerous experiments, resulting in the renewal of teaching contents and methods. In fact, in 1991, around 75% of all Italian

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technical schools were involved in educational projects aimed at adjusting the various courses to the new training needs of the labour market. These projects were co-ordinated by the Technical Education Directorate of the Ministry of Education.

Vocational schools were created in the 1950s in order to train qualified manpower. These schools accept students from 14 to 17 years of age with the possibility of extending studies until the age of 19, for those attending experimental five year courses.

These secondary schools provide a short cycle system, allowing rapid access to the labour market. Since 1969, two-year courses have been established offering a vocational certificate. Vocational schools are divided into the following production sectors:

- Agriculture;
- Industry and Handicrafts;
- Services.

Vocational education curricula have been oriented towards a high content of technical subjects in order to train for specific qualifications. The choice of a short-term courses upon completion of compulsory education was reserved in the past for those students who desired practical training, in order to accede to the labour market as early as possible.

Since 1989, in order to respond to the changing needs of the labour market, an experimental 'Project 92' was created centred on the following concepts:

- more general culture in order to promote the intellectual growth of young people;
- multi-disciplinary training in order to meet the needs of the productive world;
- reducing the number of qualifications from around 150 to approximately 20;
- promoting individualized education in order to compensate socio-cultural disadvantages;
- links with the regional system of vocational training.

REPUBLIC OF KOREA

In the Republic of Korea, technical and vocational education is offered in two major systems: the formal system (within the framework of the formal 6-3-3-4 school system); and the non-formal system offered by the Vocational Training Centre within the Ministry of Labour. Formal technical and vocational education is offered by technical high schools at the secondary level and by two-year courses at junior technical colleges and four-year industrial courses at the university-level. The technical high schools are designed to train skilled workers while the junior technical colleges and the industrial universities are designed to produce technicians and technologists.

Secondary technical and vocational education in Korea is provided by different types of educational institutions: trade schools, higher trade schools, night courses attached to industries, and middle-level technical schools. In addition general education high schools also offer vocational courses. Technical and vocational education at the post-secondary levels trains technical personnel for more specialized and diversified occupations.

In Korea, 33 junior technical colleges offer two to three-year post-secondary educational programmes, to train middle-level technicians, by providing theoretical knowledge and practical technical skills.

Twelve industrial universities in the country are a direct extension of technical high-schools and junior technical colleges, designed to produce technologists with management capacity and technical expertise.

All technical high schools, junior technical colleges and industrial universities have a co-operative education programmes with the world of work, to provide students with on-the-job training, which is obligatory for minimum six months. Committees for this co-operative programme have been established with a view to developing curricula, information exchange, job-placement and on-the-job training.

At present there is a problem imbalance of manpower supply and demand between the industrial sector and the education system, due to the fact that the education system did not cope with the rapid development of high-level technology industries such as electronics, petro-chemicals etc. The actual education system does not cater for present industrial needs. The main reasons are that the educational system is too-academically oriented; technical curricula are inadequate; shortage of qualified technical teachers and workshops.

In order to overcome these problems, the current technical and vocational education reform in Korea emphasizes:

- linkage between secondary and post- secondary technical and vocational education institutions by raising the quota reserved for technical and vocational education secondary school graduates at the college entrance examinations;
- further development of technical and vocational education by raising the number of secondary technical and vocational school students enrolled to 50% of total enrolment in upper-secondary education;
- recruitment of qualified vocational high school teachers and establishment of an in-service training system;
- development of co-operation between schools and industry;
- establishment of a central vocational education and training committee, composed of representatives from industry, labour organizations and the government.

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KENYA

In Kenya education places emphasis on certain elements of technical and vocational education at both the primary and secondary levels, providing students with scientific and technical knowledge which can be utilized for obtaining employment.

Primary education curricula includes practical subjects such as home economics, home arts and crafts, and agriculture with practical activities.

At the secondary level, the curricula also includes technical subjects as agriculture, woodwork, metalwork, mechanics, electricity, drawing and design, building construction, home economics, and commerce. Students are required to undertake at least one of these practical subjects.

The overall objectives of technical and vocational education in Kenya are:

(i) to provide training opportunities for the increasing number of school leavers in order to enable them to be self-supporting;

(ii) to develop practical skills and attitudes which will lead to income-generating activities in the urban and rural areas through self-employment;

(iii) to provide practical education and training skills which are relevant to Kenya's agricultural, industrial, commercial and economic needs;

(iv) to provide the technical knowledge and vocational skills necessary to enhance the pace of this nation's development;

(v) to encourage self-employment whilst at the same time producing skilled artisans, technicians and technologists at the ratio of 1 technologist to 5 technicians to 30 craftsmen/artisans (1:5:30).

To fulfil these objectives, the Ministry of Technical Training and Applied Technology provides training opportunities through a variety of course, such as:

Artisan Level Courses for two years in various trades intended mainly for primary school leavers. These courses are offered in Youth Polytechnics (YPs), National Youth Service Training Schools, and some industrial training centres and rehabilitation centres.

Craft Level Courses for three years in various trades, offered to secondary school leavers and graduates of artisan-level courses. These courses are being offered by Institutes of Technology, Technical Training Institutes, Industrial Training Centres, the National Youth Service Training Institute, Kenya Industrial Training Institute, and some Ministries.

Technician (Diploma) Level Courses for three years offered to secondary-school leavers and graduates of craft-level courses. These courses are offered by National Polytechnics, Institutes of Technology and other Governmental and semi-public training institutes.

Technologist (Bachelor of Technology) Level Courses for two years offered to graduates of the technical and vocational training system.

Advanced Technologist (Master of Technology) Level Courses for two years

intended for graduates of the Technologist-level courses.

In all training programmes there is a component of entrepreneurship education. This prepares trainees to acquire skills for self-employment. In order to make vocational training adequately effective by producing competent national manpower, on-the-job training is an integral part of training at all levels.

NIGERIA

In Nigeria technical and vocational education is defined as "that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge". The aims of technical and vocational education are to provide trained manpower in the areas of applied science, technology and commerce, particularly at sub-professional grades, as well as the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development.

In Nigeria, technical and vocational education subjects are introduced in the junior secondary schools providing courses on technology, local crafts, home economics and commercial education. Subsequently, technical and vocational education is provided in:

(a) Vocational Schools (including artisanal training centres)
The courses provided lead to the award of a Trade Test Certificate, which is recognized by the Ministry of Labour.

(b) Technical Schools to train craftsmen, who qualify with a National Technical Certificate and/or an Advanced National Technical Certificate, following which graduates can continue education in the polytechnics.

(c) The Polytechnics/Colleges of Technology and similar post-secondary institutions such as Colleges of Agriculture and Colleges of Technical Teacher Education produce technicians and technologists. The courses offered by these institutions lead to the award of a National Diploma (GNAWED) or a Higher National Diploma (HND), except in the field of Technical Teacher Education which leads to the award of a National Certificate of Education (NCE) (Technical).

The programmes offered by the polytechnics are organized in such a way that the training environment is a replica of the working environment. The machines and facilities provided for training are the same as those existing at the workplace, adapted to local conditions.

In order to maintain Nigeria's economic competitiveness, it is essential to maintain a constant link between industry and technical institutions in order to constantly review programmes and to adapt them to the changing environment.

In view of lack of funds for purchasing effective teaching/learning materials technical teachers have shown their ingenuity by resorting to improvisation. Hand tools and demonstration kits for many trades have been fabricated locally by the teachers themselves.

Co-operation with industry and firms exists to assist the polytechnics. These industries sometimes provide financial assistance for research, design and construction of machinery. Through this co-operation, polytechnics have also been able to produce

locally, machines which are being used in small scale industries. Efforts have also been made by certain universities to admit academically sound graduates from the polytechnics.

ROLE OF TECHNICAL AND VOCATIONAL EDUCATION

Both developed and developing countries are increasingly aware of the importance of technical and vocational education in human resource development. The meeting extensively discussed the following issues pertaining to the role of technical and vocational education in the educational system and the process of socio-economic development in each of the participating Member States:

1. Linkage between Technical and Vocational Education and the World of Work

Technical and vocational education has close links with the world of work. Strengthening this link is essential to the development of this type of education. The major issues in this respect are based on the development and updating of curricula in order to respond to the requirements of the industrial sector. All of those involved in this process should work in close and constant co-operation to find solutions to problems encountered in this area.

The curriculum development process could be supported by the establishment of a committee where all parties concerned are represented (i.e. trade unions, employers, students, educational personnel such as teachers, planners, administrators etc.)

The present trend is to ensure that the majority of demands for curriculum modification and come from industry. Core curricula designed at the national level can be, and should be, modified at local levels, and should concentrate on creating key competencies. It was agreed that the major trend in many countries is towards competency-based education and training.

Changing technology will inevitably encourage technical and vocational education systems to improve methods and approaches in order to prepare students not only with current necessary skills, but also prepare them for new occupations.

Several possible approaches to improve the linkage between technical and vocational education and the world of work were identified:

- by combining theoretical education, provided primarily in schools, and practical training provided preferably in the world of work;
- by improving the practical skills and knowledge of those undergoing technical and vocational education through the involvement and active participation of enterprises in the long-term training process, permitting training at the work place in real working conditions. This is advantageous not only to the training of the student but also for productivity in industry;
- by involving all those concerned in the planning and development of curricula in order to meet the needs of the labour market.

2. Technical and vocational education as an integral element of general education and a life-long process

Within the rapid development of modern technology, technical and vocational education is no longer regarded as an isolated education process. Technical and Vocational Education should be an integral part of the education system and could, if necessary, lead to higher education.

In some countries curricula has been adapted to include practical training in both primary and secondary schools, thereby providing technical culture in the general educational system.

To meet with constant technological change, and in order to improve the quality of technical vocational education, measures need to be taken to widen the scope of technical and vocational education.

It was also felt that technical and vocational education is part of life-long education and that industry should provide in-service training to upgrade skills which would leading to better career opportunities.

3. Making Technical and Vocational Education more attractive

Recognizing the importance of technical and vocational education in national human resource development, many countries are making efforts to increase enrolment in their technical and vocational schools. Some countries have established objectives to ensure that the number of students in this category reach a certain percentage of total secondary school enrolment. However, many factors discourage students to do so, including low level of social status, poor public image, lack of outward and upward mobility within the educational system and limited opportunities for further career development for technical and vocational education graduates, thereby making this type of education less attractive.

The following solutions have been proposed to raise the social status of technical and vocational education:

- making students, parents and employers more aware of the career potential for technical and vocational education graduates;
- increasing employment opportunities by providing a better information system on current labour market needs and data;
- establish both horizontal and vertical articulations between technical and vocational education and other elements of the educational system.

Many countries have increased the flexibility of their system by providing technical and vocational graduates access and/or opportunities to higher education without bridging courses. This system also provides adult education courses permitting students to change their orientation at a relatively advanced stage of training. A system which permits students to transfer their 'credits' has proved to be very helpful in this respect.

4. Inculcation of entrepreneurial skills

In many developing countries, wage employment opportunities int he production sector are diminishing, accompanied by rapid expansion in the service industries. This trend has forced governments to take steps to promote self-employment and entrepreneurship development. Ion the meantime, current global economic innovation has made small and medium enterprises play an increasingly important rôle in the economic development of nearly every country.

The great potential of small and medium enterprises and the self-employed to become important customers of technical and vocational education, has been increasingly recognized in recent years. This phenomenon has resulted in great efforts to include entrepreneurial skills, such as management, planning, budgeting, marketing etc., in the curricula in technical and vocational education schools. This has also created a new dimension in the training of technical and vocational education.

It was felt that entrepreneurship has a wider concept which applies to individuals, governments, as well as the public and private sectors and community organizations. Due to their need for similar entrepreneurial skills in planning, marketing and management, it is anticipated that for the future technical and vocational education personnel will need to be trained, not only in their particular field, but also in these areas.

5. Efforts to improve the participation of women and other special groups in technical and vocational education

Although tremendous efforts have been made to eliminate discrimination in technical and vocational education, many millions of women throughout the world occupy jobs without even a minimum of equality. It has been widely recognised that providing the access of young girls and women to technical and vocational education is an essential element of human resource development. The fact that provision of only generally traditional courses (such as domestic science courses etc.) places restrictions on women's choice of employment and stops them from undertaking courses for occupations traditionally reserved to men. There is a growing tendency to offer non-traditional courses in a variety of subjects for girls and women which should improve their access to technical and vocational education. It should be emphasised that in order to improve the access of girls and women to technical and vocational education, it is essential that measures be taken at the national/Government levels.

Other special groups need to be considered, such as immigrants, refugees, early school leavers, migrants from rural to urban areas seeking new situations etc. Technical and Vocational Education should provide adequate;education and skills training for these social groups to meet their specific needs. Another major challenge faced by vocational guidance and counselling is to provide a clear picture of the labour market situation and training special groups to be realistic in their employment goals.

6. Teacher Training

The rôle of technical and vocational education teachers is undergoing radical change. Teachers are no longer just dispensers of information, they are also considered to be knowledgeable specialists, vocational practitioners, curriculum designers, student counsellors, educational managers etc.

The following measures which have been adopted in some countries have proved

to be effective:

- recruitment of teachers from the world of industry, taking into their account their professional qualifications and vocational experience. They may be recruited either part-time or full-time and are usually required to undertake formal teacher-training courses;

- improving the quality of technical and vocational teacher education by placing greater emphasis on practical skills training curricula. Establishment of closer links between teacher/education training institutions and enterprises is also essential;

- technical and vocational education teachers are required to periodically undertake programmes in continuing education in order to update their knowledge and skills. Competency-based training has been widely accepted and has proved to be efficient.

7. The economics of technical and vocational education

It is obvious that technical and vocational education is more expensive than general education and, therefore, needs greater justification to governments, industry and the general public.

The main source of funding for public-sponsored technical and vocational education comes from local, regional and national governments. In most countries, technical and vocational education institutions are entirely funded by the government. However, in view of the rapid advancement of new technology and the higher cost for new equipment, governments alone can no longer bear the ever-increasing costs of technical and vocational education. The following principles for funding have, therefore, been recognized:

- government funds should be utilised for infrastructure and other initiation processes;

- the private sector should be encouraged to provide technical and vocational education;

- a more favourable environment should be created to encourage industry to provide additional financial support (i.e. levies, training centres etc.) to technical and vocational education;

- the direct beneficiaries - students and respective employment sectors, should share at least partially, the financial burden of technical and vocational education;

- taking into account their facilities, technical expertise and low-cost student labour, technical and vocational education institutions should be encouraged to undertake income-generating activities;

- in technical and vocational education institutions, particular attention should be given to utilise human and material resources efficiently and to avoid wastage.

GUIDELINES FOR FUTURE CASE STUDIES

According to the UNEVOC Work Plan, a series of case studies will be undertaken in selected Member States in the various regions to determine the role of technical and vocational education. These case studies will be followed by a synthesis of results to reflect the global situation.

During the second half of the meeting, the format and contents for the case studies were discussed and it was agreed that, in formulatin ghte structural elements and finalising the guidelines, a problem-solving format be followed.

The case studies, as suggested by the meeting should include:

1. Analysis of the present situation in the country:

   - economic conditions;
   - human resource development;
   - the existing technical and vocational education system (legislation, management, structures, institutions and articulation with other elements of the educational system etc.).

2. Forecast of the future situation:

   - what the country hopes to achieve through an improved technical and vocational education system.

3. Ways to achieve the desired future situation:

   - identifying the existing problems;

   - national policies and innovative measures to promote the further development of technical and vocational education

The ultimate objectives of the case studies should indicate the desired future situation vis-à-vis technical and vocational education in national socio-economic development. In this context it was recommended that the following issues should be included in the case studies:

1. Strategies to innovate technical and vocational education systems to cope with the changing demands of the labour market caused by national economic development.

2. Policies to promote close linkages between technical and vocational education inzstitutions and industries.

3. Strategies to raise the social status of the entire technical and vocational education system and its graduates.

4. Approaches to allocate and efficiently utilise the financial resources to support technical and vocational education.

5. Efforts to include entrepreneurial orientation and skills in technical and vocational education.

6. Measures to improve the quality of teachers and instructors.

7. Procedures to promote articulation between technical and vocational education and other elements of the educational system, especially higher education.

8. Ways to improve career guidance and counselling.

9. Policies to improve the participation of special social groups in technical and vocational education.

10. Development of technical and vocational education in the informal sector.

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